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ABSTRACT

A general model for a management information system for vocational and technical education is presented for statewide planning purposes. This enrollment system was designed by the vocational division of the Florida State Department of Education to implement the recommendations of the state advisory council for vocational education. Included are these six components: (1) student data, (2) instructor data, (3) program course data, (4) space facility utilization, (5) student placement and followup, and (6) fiscal data. During the 1971 fiscal year, a large number of area vocational centers began implementing these subsystems. In order to improve the system, vocational educators at all levels and leaders in industry must be involved. Full state funding is needed for a long-range commitment, and detailed plans at all levels must be developed. In order to provide relevant information for decision-making in vocational and adult education, a revised enrollment system should be aligned with public and private employment services, together with subsystems in industry. This document is related to four others, available in this issue as VT 019 460-VT 019 463. (AG)

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VOL. 5

CONTINUED EVALUATION OF A MANAGEMENT INFORMATION SYSTEM FOR VOCATIONAL–TECHNICAL EDUCATION

Statewide Evaluation of
Vocational–Technical Education in Florida
Richard H. P. Kraft, Project Director

FLORIDA STATE UNIVERSITY
1972

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Statewide Evaluation of Vocational–Technical Education in Florida

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CONTINUED EVALUATION OF A MANAGEMENT INFORMATION SYSTEM FOR VOCATIONAL–TECHNICAL EDUCATION

Raymond F. Latta and
Max L. Schmidt

Statewide Evaluation of
Vocational–Technical Education
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THE FLORIDA STATE UNIVERSITY
DEPARTMENT OF EDUCATIONAL ADMINISTRATION
1972

THE FLORIDA STATE UNIVERSITY
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DEPARTMENT OF EDUCATIONAL ADMINISTRATION

COLLEGE OF EDUCATION

July 19, 1972

Mr. John H. Hinman, Chairman
Florida State Advisory Council
on Vocational & Technical Education
Suite 752 - Tallahassee Bank & Trust
Tallahassee, Florida 32304

Dear Mr. Hinman:

The Study Group for Florida Statewide Evaluation of Vocational-Technical Education submits to you the following evaluation reports on Vocational-Technical Education in Florida for the school year 1971-72:

1. An Assessment of Goals and Priorities in Florida's State Plan for Vocational-Technical Education

2. Benefit-Cost Comparison of Vocational Education Programs

3. The Role of Florida Vocational-Technical Education in Providing Services for the Handicapped

4. Expectations and Satisfactions of Parents and Students with Vocational-Technical Education

5. Continued Evaluation of a Management Information System for Vocational-Technical Education

It is our hope that these reports will be helpful to all who are concerned with strengthening the State's comprehensive system of vocational-technical education.

Respectfully,

Richard H. P. Kraft

Richard H. P. Kraft
Associate Professor

RHPK/nm

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CONTINUED EVALUATION OF A MANAGEMENT INFORMATION SYSTEM FOR VOCATIONAL-TECHNICAL EDUCATION

PART I

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The Florida State University
Tallahassee, Florida
May, 1972

I

PROGRESS OF MANAGEMENT INFORMATION SYSTEM (MIS) IN FLORIDA: 1971-1972

The Florida State Advisory Council on Vocational and Technical Education made the following recommendations for the development of a management information system for Vocational, Technical and Adult Education in 1970-1971:

1. That the Management Information System for Vocational, Technical and Adult Education again be given top priority.
2. That complete systems analysis study be undertaken immediately.
3. That the Guidance Subsystem be added to the MIS.
4. That a report of what disposition the State Department of Education will make of the Advisory Council's recommendations be requested.[1]

As evidenced by the aforementioned recommendations, there has been a lack of accurate information necessary for more rational decision making. There is a definite need for an information system which will provide local vocational centers, counties, and the Division of Vocational, Technical

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[1] Richard H. P. Kraft (ed.), Perspectives on Progress: Career Education in Florida (Tallahassee, Florida: Department of Education, 1971), p. 340.

and Adult Education with accurate, timely information. In an effort to develop and implement such a system, the enrollment system has been designed by the Division of Vocational, Technical and Adult Education, Florida State Department of Education.

The enrollment system is designed to minimize the time spent by instructors and students in providing data elements and to eliminate the duplication of requests.[1] The advantages of this system are as follows:

1. Data elements are collected at the most logical source--the student.
2. The elements are processed on a student basis which allows both duplicated and unduplicated counts to be easily summarized.
3. Timely and accurate information for legislative, state and federal reporting requirements.
4. Efficienty of operation--reduces duplication of effort.
5. Provides management with decision making tools.
6. Provides feedback information to the local agencies to help evaluate their programs.
7. Produces reports so that trends can be determined and projections made.
8. Provides flexibility in data gathering and processing. Those institutions having computer capabilities may desire to transfer data on cards or magnetic tape or use the system's data gathering instruments.

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[1] Florida Vocational-Technical and Adult Education Information System (Tallahassee, Florida: Department of Education), p. 2.

9. Provides base information for the development of additional subsystems.

10. Minimum of effort on the part of local agencies in providing information to meet the needs of local, state and federal agencies.[1]

The components of the enrollment system are as follows:

Student Data

Instructor Data

Program Course Data

Space Facility Utilization

Student Placement and Follow-up

Fiscal Data

Implementation of the six subsystems is not yet complete. According to officials in the Division of Vocational, Technical and Adult Education, the enrollment system is being implemented as illustrated in Figure 1.

During the 1971-1972 fiscal year the three subsystems as indicated in the illustration were implemented in following area vocational centers:

Thomas P. Haney Area Vocational-Technical Center

Bradford-Union Vocational-Technical Center

Sheridan Vocational Center

Withlocoochee Area Vocational-Technical Center

Collier County Area Vocational-Technical Center

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[1] Ibid., p. 5.

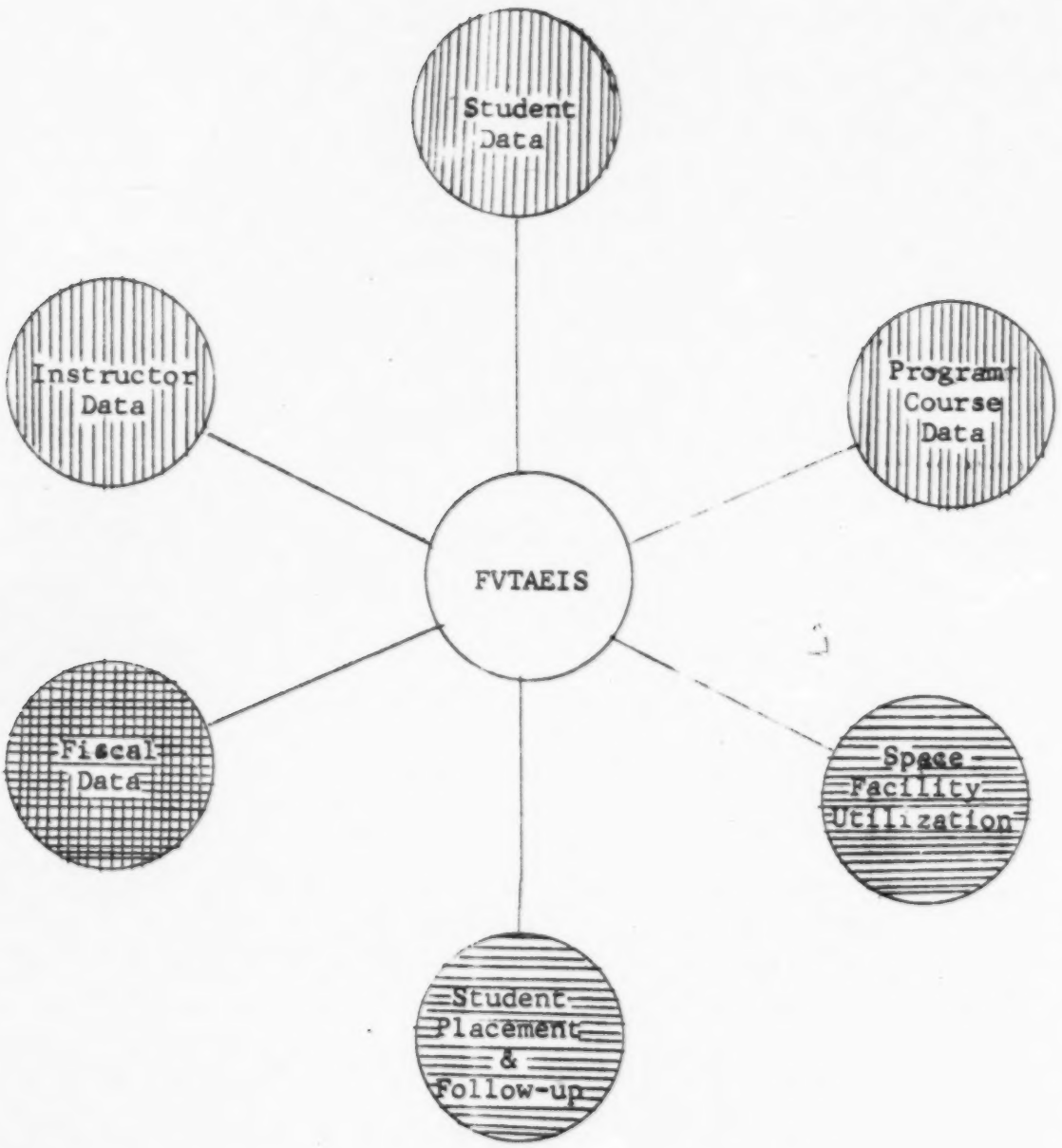

Fig. 2.--Components of the Enrollment system.

Collier County Area Vocational-Technical Center

Lindsey-Hopkins Education Center

George Stone Vocational-Technical Center

Tampa Bay Area Vocational-Technical Center

Lake County Vocational-Technical Center

Lee County Vocational-Technical Center

Lewis M. Lively Area Vocational-Technical Center

Manatee County Vocational-Technical Center

Mid-Florida Technical Institute

North Technical Education Center

Pasco County Comprehensive High School

Pinellas County Education Center

Polk County Vocational-Technical Center

St. Augustine Technical Center

Sarasota County Vocational-Technical Center

Suwanee-Hamilton Vocational-Technical Center

Taylor County Area Vocational-Technical Center

Washington-Holmes Vocational-Technical Center

In addition, all schools offering vocational programs in the counties of Pinellas, Polk, Citrus, and St. Johns are participating in the project.

II

FUTURE PLANS FOR IMPLEMENTATION

Plans for the implementation of the enrollment system have been developed by the Office of Vocational Program Services in the Division of Vocational, Technical and Adult Education, Florida Department of Education. The major processing center for the system is in Pinellas County.

Officials in the Office of Vocational Program Services are satisfied with the rate of implementation of the enrollment system as it was designed. On July 1, 1972, all counties and vocational centers in Florida are to participate in the three subsystems currently in operation. In addition, the space facility utilization subsystem and the student placement and follow-up subsystem will be implemented in all counties and centers. Therefore, if the plan for implementation is followed as scheduled, five of the six subsystems will be operational as of July 1, 1972. It is estimated that the fiscal file will not be initiated until at least the following year. A guidance subsystem is still in the pilot stage in the form of CVIS (Computerized Vocational Information

Service).[1] However, much of the information provided by such a system will be contained in the student placement and follow-up subsystem.

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[1]This pilot study is being conducted in Leon County, Florida.

III

ANALYSIS

In an attempt to correctly analyze the management information system in the area of Vocational, Technical and Adult Education, the following questions were examined:

1. What kinds of information are needed to support the local, state, and federal program requirements?

According to Vocational Program Services officials, the information provided by the enrollment system has been quite satisfactory in meeting reporting requirements at the state and federal levels.

2. For what purpose will the information be used at each level?

As stated previously, most of the data collected has been used in reporting to the state and federal governments. It has been indicated by the state officials involved that the information provided by the enrollment system has been used by the Division of Vocational, Technical and Adult Education in decision making; however, the extent of this utilization is presently unknown. At the local level, the purpose of the information will be to provide local administrators with current,

accurate data to support decision making in program changes including new programs, in employment of staff, in providing a means of measuring effectiveness, and in other areas affecting vocational-technical education. It is felt that in its present form the enrollment system lacks the comprehensiveness needed for support in decision making.

3. Is the information currently available adequate for all users of the system?

If the assumption is made that a major objective of the enrollment system is to provide information for state and federal reports, than this question can be answered affirmatively. However, due to the limited comprehensiveness of the enrollment system, its effect on long range planning will be minimal. It should be pointed out that the effectiveness of the system will increase as the system matures.

4. Are the users benefiting from the data collected?

At this point, the state and federal governments have been the major users of the data collected. The local vocational centers should receive more information after the system has been implemented fully. In an interview conducted with a Vocational Program Services official in December, 1971, it was stated that the data received was being processed for local distribution in the form of reports. Some of the reports were already available. However, there was a slight

time lag since the data was collected during this school year. Because the project is still in the infant stage, it is difficult to ascertain to what extent the data would be utilized by local administrators once it is received.

5. Is the data which has been gathered being used to improve school performance?

Local vocational centers and counties currently participating in the system have not yet received data which might be of use in evaluating their programs. Therefore, no changes have been made in programs in an effort to improve performance as a direct result of information made available through the enrollment system.

6. Is the data being collected relevant for future decision making?

Data collected thus far includes such items as: teachers employed in the various programs; student enrollment by school type, sex, ethnic group, and program; and student withdrawals and completions. It appears that the data being collected is extremely limited in its capacity for projecting trends and needs for future vocational programs. In order to establish program priorities, evaluate programs, and make future projections as related to these programs, the information system must have a broad base in order to accommodate these kinds of decisions.

7. Is the MIS being implemented on a time schedule?

As originally designed, the enrollment system is being implemented on schedule; however, there is some doubt concerning when the fiscal subsystem will be implemented. Currently, there is no specific target date for this subsystem.

8. Have adequate resources been made available in designing and implementing the system?

Although many people have been involved indirectly in designing and implementing the enrollment system, the burden of the project has fallen on one or two persons. It is clear that a project which eventually will provide a basis for most of the decision making in vocational, technical and adult education warrants much greater support.

In summary, the MIS for vocational, technical and adult education has been developed and partially implemented by the Office of Program Services, Division of Vocational, Technical and Adult Education. No doubt, the availability of resources has made the project difficult; however, there are very few states which have made equal progress. Additionally, because the majority of the planning has taken place at the state level, there has been an inadequate amount of involvement of persons from the local vocational-technical education centers and counties in addition to persons outside of the educational system. One of the shortcomings of the enrollment system is

the lack of linkage with industry and employment offices. Perhaps if the planning of design and implementation was more participatory in nature the system would not be as isolated as it appears to be. However, some of this "isolation" may be reduced as the student placement and follow-up subsystem is developed.

Whether the stated advantages[1] of the enrollment system are present in the system as it currently exists is seriously questioned. At this point in development, "management" has not been provided with timely, relevant information for decision making, especially at the local agency level. The data which is available to the local vocational education centers and counties is inadequate to effect decision making or to fully evaluate programs and provides a minimum of information on which to base projections in planning future programs.

There is no evidence available to refute the apparent lack of effectiveness measures which should be a part of a supporting MIS. The analysis of data in regard to considering alternative strategies in meeting the objectives of the vocational, technical and adult education programs has been treated lightly. Additionally, there is no planned program to further the competency of local administrators in analyzing

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[1]See Numbers 5 and 6, page 2.

data received. In fact, a major shortcoming of the project is the lack of a long range implementation plan as evidenced by the dubious implementation date for the fiscal subsystem.

The Office of Program Services has put forth considerable effort in developing the enrollment system. Their efforts should be noted since the system is far ahead of most state-wide programs. The aforementioned shortcomings of the enrollment system are not intended as criticism, but as observations of an analysis for the purpose of improving the system.

IV

RECOMMENDATIONS

In light of this analysis the following recommendations are made:

1. That funds be appropriated by the legislature to fund the Management Information System adequately by way of a long range commitment for full implementation.
2. That a total coordination of effort be realized through the establishment of a participatory planning procedure involving all levels of the vocational education system and outside interests such as industry both in the public and private sector.
3. That a detailed written plan be developed by representatives of all interest (e.g., industry) including expertise at every level (e.g., local, state) for full implementation of the MIS.
4. That a revised enrollment system be aligned with subsystems in industry, and employment offices both public and private be given high priority in the above mentioned MIS. This should alleviate the "isolation" of the system as it currently exists, and also provide relevant information

for decision making at all levels of the vocational, technical and adult education system.

CONTINUED EVALUATION OF A MANAGEMENT INFORMATION SYSTEM FOR VOCATIONAL-TECHNICAL EDUCATION

PART II

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May, 1972

I

VOCATIONAL MANAGEMENT INFORMATION SYSTEM (MIS): A SUBSYSTEM IN INFANT STAGES

Having read the evaluations of the vocational, technical, and adult education MIS contained in the last two statewide evaluation reports, the following points are quite clear:

1. Neither State Department nor individuals directly involved with the vocational MIS can be blamed for the "so-called" shortcomings which prior consultants have pointed out.[1]
2. There exists a need to coordinate and integrate other MIS efforts into a state MIS; that is, unless the duplication of cost and efforts can be well afforded.
3. No predominant management system or procedure appears to exist in any of the divisions or bureaus. An MIS should support a management system.
4. If efforts to plan, design, test, and implement an MIS

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[1]It was this analyst's findings that the system is in remarkable shape given the minimal dollars and manpower allocated to the project.

which will serve management are to be successful, the responsibility for each task must be carefully delineated, detailed schedules developed and posted, and procedures for monitoring project progress adopted.

5. Any MIS--statewide, vocational, or other--without some linkage with industry and employment agency would more appropriately be viewed as an information system (IS) rather than an MIS. The inclusion of a linkage with both industry and employment agency is a must, especially if management is concerned with vocational-technical areas which are programmatic in nature.

Rather than evaluating the existing system and the processes followed to arrive at its present status, the focus of this paper is on a generalizable procedure for arriving at an MIS which will serve management. The model or procedure proposed in the following pages is generalizable to systems at both the micro- and macro-organizational level. The procedure is not to be viewed as either fixed or all-inclusive. It is hoped that individuals responsible for the management of MIS under consideration will compare their plans and project activities with those outlined in the proposed model.

A Procedure for Establishment of an MIS

STEP 1. Establish a Need for MIS

Why should there be any concern about an MIS? Has

the quantity of data needed by the organization and management exceeded the capability of the present system? Is there a need to develop a more effective and efficient (cost and time) system for servicing management's information needs? Is there a management information problem? For example, is management presently using: (a) obsolete information, (b) information not related to decision making, (c) information with large gaps, and (d) unrefined information?

Clearly, a need for an MIS must be established, management must possess a desire for need fulfillment and an understanding of how an MIS will meet this need, and, finally (and most importantly), management must be willing to commit the necessary resources to see the new system through. This includes management involvement and contribution at various stages of development.

STEP 2. Construct Detailed Project Plan (PERT-MAP)

Before beginning the development of any complex system such as an MIS, a detailed plan showing all of the project activities should be developed, documented, and approved by management. An MIS task force group might be constructed to plan and implement the project activities. Tools or techniques which might be beneficial at this stage of development are Program Evaluation Review Technique (PERT) or Critical Path Method (CPM) and Multiple Allocation Procedure (MAP).

The PERT schedule should contain all of the project activities according to logical sequence and interrelationships. The expected elapsed time for each activity should also be determined and contained in the network. MAP could then be used to allocate resources to the project and thus put the network on a calendar basis. Having used PERT and possibly MAP, the implementation of the plan for the development of the MIS can be controlled by management.

There is a scarcity of sophisticated planning prior to project start in education. Plans usually have been too vague and have existed primarily to fill paper rather than for control of project implementation. Another problem has been that even when comprehensive plans have existed in education, they have rarely been followed, as management involvement in the preparation of the plan has been either nil or minimal. To begin an MIS project without such a functional plan for project control can only result in both increased costs and a far less than optimal resultant system.

STEP 3. Establish/Review and Document Goals and Objectives

The environment in which tomorrow's graduates will live and work five to ten years from now should be taken into consideration when planning any MIS which will serve managers in education. This is not only essential to support the planning function, but full implementation of an MIS may take

between three and six years. In short, the system could become outdated before being fully implemented.

Types of questions which might be asked at this stage:

a. What programs will be offered?

b. Who will be the consumers of our graduates?

c. What kind of graduates will industry need?

d. What skills are being phased out?

e. Who will constitute the unemployed?

f. What will we be duplicating that industry and other educational institutions are producing?

g. What will be the emigration rate of graduates out of the state? Where will they be going?

h. What skills will instructors need over and above what they already have?

i. What part of our programs will become more field-oriented?

j. What facilities will be needed over what we have?

k. How will technology change the educational environment?

Once goals and objectives have been established, the organizational structure should be studied and changes made so that the structure supports achievement of the goals and objectives. At this point, a hierarchy of goals and objectives

should be established which reaches down to the lowest organizational unit. To establish consensus on goals and objectives, the delphi technique is posed for consideration.

STEP 4. Determination of Management Information Needs/ Requirements

Basically, there are two types of information to be considered: that used for management within the system and that which leaves the system in the format of data reports. The first type of information needs can best be determined through a functional analysis of each manager's activities and related information needs. Figure 2 contains a model which may be viable for establishing management information needs, by function, for each objective at that level.

It is important that organizational objectives be used in the functional analysis as each manager has both horizontal and vertical relationships which are interrelated, and, thus, relationships must be coordinated. For example, there are managers above, below, and at the same level whose areas of responsibility relate rather directly to the position being considered. A manager's contribution to organizational objectives can be measured by how effectively he performs his assigned functions and by the degree to which his performance supports related missions and functions both vertically and horizontally. To perform his functions, the

manager needs information; it is this needed information which is the concern at this stage.

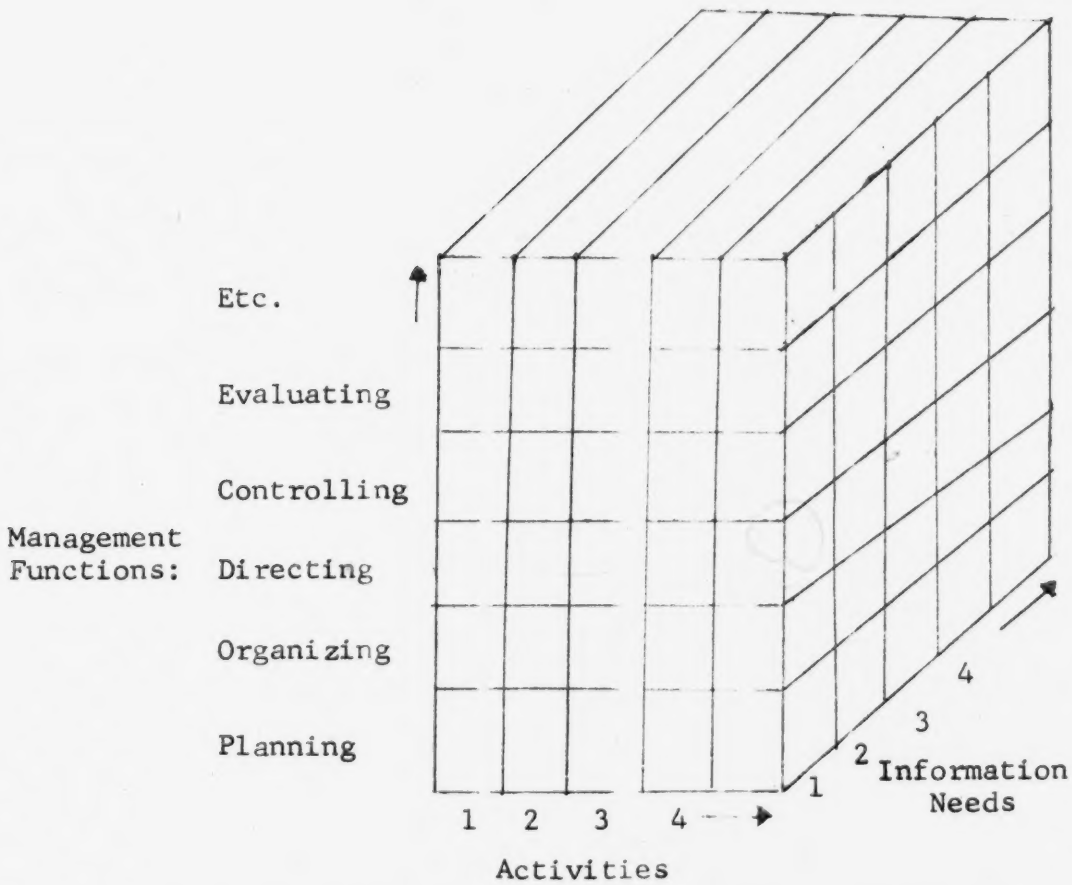

Fig. 2.--The Information Needed by a Manager to Successfully Perform Activities Related to Each Management Function

Some questions which might be appropriate at this stage:

a. What source information is needed?

b. What should be its frequency of occurrence?

c. What is its frequency of dissemination to be?

d. What is an acceptable time period for the information cycle?

e. What is the permissible time lag between organization of data and translation into information?

f. What format should be used to present the information?

Having established management information needs, the processes for presently providing information and information flow, both into and out of organization, are studied. (It is here that reports and forms for both in- and out-of-house are studied.) These documents can be gathered simply by conducting an inventory of all educational information presently collected by the organization. Questions of the following type might be posed with regard to each form or report:

a. Is the information tabulated and summarized?

b. Is the report distributed? If so, to whom, what agencies, etc.? How often is this information collected?

c. How often is the form/report used?

d. How is it used? Is it simply "nice-to-know" information or does it support the decision-making process somewhere in the organization?

Once the information output needs and information output presently collected by the organization have been analyzed

and some synthesis has taken place, the information outputs should be determined.

STEP 5. Establish MIS Objectives

It is at this point that objectives which the information-processing system must satisfy are established and documented. Once again, management approval should be sought. This is an essential stage in the development of any MIS. These objectives might best be stated in terms of the functions which the system is to perform. Such statements, if properly written, should convey, both to management and the system's designer, the objectives which the system must meet if it is to be effective.

STEP 6. Systems Design

Activities in this step relate more to the analysis and development of system's files, report formats, programming, etc. It is here that decisions such as to use fixed length files or hierarchical files might be made. Another decision which might be encountered at this stage may revolve around whether or not to design or acquire software.

Finally, it is here that the users of the MIS are trained. No MIS can be implemented and meet with even moderate success unless a good training program has been provided and adequately attended by all managers within the organization.

STEP 7. System Evaluation

Once developed, the MIS should be field tested a short period of time and evaluated. For evaluation purposes, the following could be used: (1) the original objectives set for the MIS system, and (2) feedback from the users as to the value of the information received in assisting management to perform its functions. Whether or not the MIS system is contributing to the achievement of the overall objectives of the organization also has to be discerned.

STEP 8. Systems Implementation

It is this step which keeps the system operating and growing. Clearly, responsibilities must be delineated and understood by both the superior and subordinate managers. If the training and personnel preparatory program was inadequate or non-existent, all of the previous work and effort will have been in vain.

Care must be taken to provide a procedure for monitoring the implemented MIS. A second word of caution: The system should not be viewed as an end, but rather as another means to bigger and better ends. The system must not remain static.

II

REFLECTING ON FLORIDA'S MIS FOR VOCATIONAL, TECHNICAL, AND ADULT EDUCATION

The preceding pages outline a general procedure for the establishment of an MIS. An analysis of how closely the vocational, technical, and adult education MIS has followed or will follow this model or a similar model has not been made. Rather, this task has been left for those at the state office level who have the responsibility for planning, designing, evaluating, implementing, and monitoring the vocational MIS. As a detailed project plan and related schedule for the vocational MIS was not found, this could be rather difficult. In lieu of an analysis, some considerations have been posed. The following are offered, not as criticism, but rather as a check list.

1. Coordination between MIS Projects

There appears to be several small MIS projects underway at the State Department of Education, Tallahassee, Florida:

1. K-12 education,
2. Community Colleges,

3. Vocational, Technical and Adult Education.

4. Educational Assessment.

If the Legislature views the vocational, technical, and adult MIS as a prototype system, then:

1. Divisions must begin communicating and cooperating;

2. An MIS task force should be established with representation from all MIS projects and management;

3. The total system should be placed under the direction (full time position) of a manager whose ability is commensurate with the scope of the project;

4. As a beginning document, the model designed by the Florida Association of Educational Data Systems (FAEDS) organization might be reviewed and, should it be acceptable, updated.[1]

2. Project Planning and Scheduling

What most complex projects in education lack is both adequate planning and a documented project schedule. Without a detailed project schedule, project evaluation and management are almost impossible. The schedule should be detailed enough

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[1]The Florida Association of Educational Data Systems (FAEDS), A Plan for the Establishment of a Statewide Educational Information Management System, A Report to Commissioner of Education (Tallahassee, Florida: March, 1969).

to show all project activities and the time needed to complete each activity. For a model procedure, interested persons should visit the Bureau of Research, Department of Elementary and Secondary Education.

> The IBM Project Control System (PCS) was applied toward the management plan of the Florida Assessment Program in October, 1971. The objectives of this application were to obtain a functional view of management's objectives and activities for the fiscal 1972 assessment program and, through subsequent analysis by program management, to provide a method for coordinating and controlling this year's assessment activities. These objectives have been fully accomplished.
>
> The application of PCS and management's subsequent analysis produced two major benefits to the assessment program. First, the time required to accomplish all activities related to the assessment program was reduced significantly (the original computed time for the program was 702 days, which was reduced to 445 days through modifications). Second, by obtaining a master calender for the program, management was better able to pace itself.[1]

To determine whether or not a project schedule for an MIS is sufficiently detailed, one might look for those activities in the schedule which were outlined in the proposed model contained herein. Two key activities are: (1) the establishment of objectives for the organization and MIS, and

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[1] Evaluation Section, Bureau of Research, Department of Elementary and Secondary Education, A Report on the Assessment Program (Tallahassee, Florida: Department of Education, January, 1972), p. 8.

(2) the training of management who eventually will use the system.

One often hears comments of the following sort from educators: "Yes, we have talked about objectives" and/or "Yes, we are presently considering and planning a program to train users of the new system." The problem is, however, that these activities and programs need to be documented and integrated into the master plan and schedule. As educators, our strongest point ought to lie in training, but training appears to be the most often forgotten planned project activity.

3. Objectives

We all dislike writing objectives because we feel they tend to restrict our creativity, imagination, innovativeness, etc. Regardless of defense mechanisms, objectives are a must for any educational organization. They earmark the information needed for evaluation. As mentioned previously, a critical activity in the development of an MIS is the determination of information requirements. A set of comprehensive objectives makes an analysis of needed information a relatively simple task. Time spent in developing objectives is saved many times over, for without objectives

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[1]These two activities were selected because they should be given careful consideration by educational agencies considering MIS.

how can the information contribute to management and organizational success?

There are two kinds of marksmen--those who shoot at a bull's eye and gauge their next shot on where their first hit relative to the center, and those who shoot first and then draw the bull's eye. One should strive to be more like our first marksman, especially when developing new programs or systems.

4. Management System

Before examining what constitutes a management system, perhaps the term management should be defined. Management, for the purpose of this document, is viewed as the allocation of educational resources to the accomplishment of predetermined objectives; a process requiring both tactical and strategic planning, factoring of these plans to small scale objectives, assignment of these objectives to subordinate managers, and the control of subsequent progress. The systems work and description of a total management system has been done more than adequately.[1] For this reason, a management procedure, Management by Objectives (MBO), will be discussed.

The State Department of Education is already preparing administrators, K-12 employed, in the MBO procedure. It

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[1] R. L. Martino, "A Total Management System," Data Processing for Management, V (April, 1963), 31-37.

is suggested that this system is perhaps even more appropriate at the state level. Given implementation of MBO at the state level, the objective hierarchy would exist and an MIS could then be established which would support an objective-based management system.[1]

5. Business-Industry Subsystem

Any MIS in vocational, technical, and adult education, if it is to be used for educational planning, must contain some linkage with both business and employment needs. This point cannot be stressed enough. Today one cannot pick up any educational journal without finding some reference to accountability/productivity and needs assessment.

The basic tool for planning in education is needs assessment analysis. Such an analysis consists of examination of where a program or organization is compared to where it ought to be. The gap between the two is referred to as a need. Sometimes new programs may be required to meet a need, existing programs modified, etc., but the needs assessment provides a guide to future organizational action.

How is a needs assessment carried out? Very simple. The environment is sensed and objectives written which

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[1]For a detailed discussion of MBO, see Raymond F. Latta, "A Procedure for Making Objectives More Functional: Management by Objectives," A Paper presented at the Fourth Annual Symposium on Educational Management, The Florida State University (Tallahassee, Florida: February, 1972).

describe what ought to be. The present status of the system, what presently exists, is determined and comparisons are then made. The point here is not on the process or comparison but on the source information needed to conduct a needs assessment in vocational, technical, and adult education. Clearly, an MIS would be invaluable, but only with the proviso that both a business and employment linkage exists. After all, these programs generally train specific skills; business is the consumer of the product, and unemployment is a measure of spillover. Therefore, linkage with business and employment centers is a must, regardless of cost, for any MIS in the areas of vocational, technical, and adult education.

With reference to the matter of costs, it is interesting to note that the thirty-six target area job banks of the U.S. Training and Employment Service probably will cost in excess of $83 million dollars annually. In terms of payoff, if this system were to reduce the unemployment rate by as little as .1 per cent, the approximate increase in wages would be $600 million. Furthermore, the unemployment insurance also would be increased by $50 million and the country also would receive additional payoffs through income tax and other sources.[1]

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[1]George P. Schultz, "New Management Boom: Automated Federal-State Job Placement," Business Management, XXXVI (July, 1969), 26-29.

The inclusion of linkage with business and employment agencies within the MIS under consideration could well have uses and payoffs beyond those related directly to vocational, technical, and adult education. Not only would such a linkage help in conducting needs assessment studies and educational planning, but such a system, through identification of needed target programs and surplus in the job market, may help relieve the problems of state welfare and unemployment. Imagine what a reduction of 10 to 20 per cent in welfare cases might mean at the state level. These individuals not only would relieve the welfare money drain, but they would become productive members of society. The benefits and payoffs gained might be synonymous with those which the Federal Government expects to receive from the job bank program.[1]

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[1]One of the job banks is located in Tampa, Florida.

III

SUMMARY AND RECOMMENDATIONS

Summary

A general model/procedure for establishing an MIS has been provided. The tone of this document has not been to criticize or fault find but, rather, to be constructive. Hopefully, those in the vocational, technical, and adult education field at the state level will review this paper and find it supportive of their needs for both additional manpower and funds. With additional resources, the MIS developed thus far might prove to be a good prototype for a larger and more comprehensive system.

Some considerations which the Division of Vocational, Technical and Adult Education may find helpful:

1. Keep in touch with other MIS developments in the State Department of Education; in particular the K-12, community college, and assessment system, as vocational MIS will want to have compatible student data files. The format for the student data files should provide both for data which are presently available and data which will assist in planning for the future.

2. During the planning stages, PERT/CPM and possibly MAP should be utilized. A detailed schedule prior to project start facilitates project management.
3. A hierarchy of objectives should be established within the division and a management procedure, referred to as Management by Objectives (MBO), be considered for adoption.

Recommendations

Recommendations for the Advisory Council are as follows:

1. To reduce duplication of cost and effort, it is recommended that an integrated educational management information system be developed. As such, the vocational MIS would be a subsystem.
2. Given that Recommendation 1 is accepted and cooperation attained, it is recommended that additional money be allocated for a complete systems analysis of the Department of Education. One product of the study, among others, would be a shared cost formula and a statement of total cost.

3. It is recommended that once costs are available, an MIS with linkage to business and employment data be given top priority.
4. Additional money must be made available for management in the Division of Vocational, Technical and Adult Education to gain training in (a) project planning and scheduling, (b) writing organizational and management objectives, and (c) management by objectives. It is recommended that time be made available for management participation in training programs and implementation of systems.